



## DEFENSE INFORMATION SYSTEMS AGENCY

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IN REPLY  
REFER TO:

Joint Interoperability Test Command (JTE)

**16 Dec 11**

### MEMORANDUM FOR DISTRIBUTION

**SUBJECT:** Special Interoperability Test Certification of the Avaya Communication Manager Messaging (CMM) Version 6.0.1 (00.1.510.1) Service Pack 19130

**References:** (a) DoD Directive 4630.05, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004  
(b) CJCSI 6212.01E, "Interoperability and Supportability of Information Technology and National Security Systems," 15 December 2008  
(c) through (e), see Enclosure 1

1. References (a) and (b) establish the Defense Information Systems Agency (DISA), Joint Interoperability Test Command (JITC), as the responsible organization for interoperability test certification.

2. Avaya Communication Manager Messaging (CMM) Version 6.0.1 (00.1.510.1) Service Pack 19130 is hereinafter referred to as the System Under Test (SUT). The SUT meets all of its critical interoperability requirements and is certified as interoperable for joint use within the Defense Information System Network (DISN) as a Customer Premise Equipment (CPE) voicemail system. The SUT met the critical interoperability requirements set forth in References (c) and (d) using test procedures derived from Reference (e). The SUT was tested with the Avaya S8800 Communication Manager (CM) Version 6.0.1-00.1.510.1 with Service Pack 19130. JITC analysis determined that the SUT is also certified with other Avaya S8700, S8710, S8720 and S8800 CMs currently and previously listed on the Unified Capabilities (UC) Approved Products List (APL). No other configurations, features, or functions, except those cited within this report, are certified by the JITC. This certification expires upon changes that could affect interoperability, but no later than three years from the date the DISA Certifying Authority (CA) provided a positive Recommendation.

3. This finding is based on interoperability testing, review of the vendor's Letters of Compliance (LoC) and DISA CA Recommendation. Interoperability testing was conducted at JITC's Global Information Grid Network Test Facility, Fort Huachuca, Arizona from 29 November through 4 December 2010. Review of the vendor's LoC was completed on 4 December 2010. The DISA CA provided a positive Recommendation on 7 April 2011 based on the security testing completed by DISA-led Information Assurance (IA) test teams and published in a separate report, Reference (f). Enclosure 2 documents the test results and describes the tested network and system configurations.

4. The Capability Requirements (CR) and Functional Requirements (FR) used to evaluate the interoperability of the SUT and the interoperability status is indicated in Table 1. This interoperability test status is based on the SUT's ability to meet CPE voicemail system requirements specified in Section 5 of Reference (c) verified through JITC testing and/or vendor submission of LoC.

**Table 1. SUT CR/FRs and Interoperability Status**

Interface	Critical	Certified	CR/FRs	Met	UCR Paragraph
IP 1000BaseT (IEEE 802.3-2005)	No	Yes	ROUTINE precedence and precedence above Routine diversion (R )	Met	5.3.2.25
			Differentiated Service Code Point (R )	Met	5.3.3.3.2
			IPv6	Not Tested <sup>1</sup>	5.3.5
			FCC part m15/part 68 (R )	Met	5.2.3.2
	No	Yes	IEEE 802.3	Met	5.3.3.2
Security	Yes	Yes	Security (R)	Met <sup>2</sup>	5.4
<b>NOTES:</b> 1. In accordance with UCR 2008 Change 1 section 5.3.5 Table 5.3.5-1 with exception of IP End Instruments all CPE devices have a conditional requirement for IPv6 capability. This capability is conditional for the SUT and was not tested. 2. Security is tested by DISA-led Information Assurance test teams and published in a separate report, Reference (e).  <b>LEGEND:</b> 1000BaseT 1000 Mbps (Baseband Operation, Twisted Pair) Ethernet 802.3-2005 Local Area Network/metropolitan Area Network Carrier Sense Multiple Access/Collision Detection Access Method C Conditional DISA Defense Information Systems Agency DISR Department of Defense Information Technology Standards Registry DSCP Differentiated Services Code Point FCC Federal Communications Commission IEEE Institute of Electrical and Electronics Engineers IP Internet Protocol IPv6 IP version 6 Mbps Megabits per second R Required SUT System Under Test UCR Unified Capabilities Requirements					


5. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at <https://stp.fhu.disa.mil>. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at <http://jit.fhu.disa.mil> (NIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at <http://jitc.fhu.disa.mil/tssi>. Due to the sensitivity of the information, the Information Assurance Accreditation Package (IAAP) that contains the approved configuration and deployment guide must be requested directly through government civilian or uniformed military personnel from the Unified Capabilities Certification Office (UCCO), e-mail: [ucco@disa.mil](mailto:ucco@disa.mil).

JITC Memo, JTE, Special Interoperability Test Certification of the Avaya Communication Manager Messaging (CMM) Version 6.0.1 (00.1.510.1) Service Pack 19130

6. The JITC point of contact is Stephane Arsenault, DSN 879-5269, commercial (520) 538-5269, FAX DSN 879-4347, or e-mail to stephane.arsenault@disa.mil. The JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The tracking number for the SUT is 1018801.

FOR THE COMMANDER:

2 Enclosures a/s

  
for BRADLEY A. CLARK  
Chief  
Battlespace Communications Portfolio

Distribution (electronic mail):

Joint Staff J-6

Joint Interoperability Test Command, Liaison, TE3/JT1

Office of Chief of Naval Operations, CNO N6F2

Headquarters U.S. Air Force, Office of Warfighting Integration & CIO, AF/XCIN (A6N)

Department of the Army, Office of the Secretary of the Army, DA-OSA CIO/G-6 ASA (ALT), SAIS-IOQ

U.S. Marine Corps MARCORSYSCOM, SIAT, MJI Division I

DOT&E, Net-Centric Systems and Naval Warfare

U.S. Coast Guard, CG-64

Defense Intelligence Agency

National Security Agency, DT

Defense Information Systems Agency, TEMC

Office of Assistant Secretary of Defense (NII)/DOD CIO

U.S. Joint Forces Command, Net-Centric Integration, Communication, and Capabilities Division, J68

Defense Information Systems Agency, GS23

### **ADDITIONAL REFERENCES**

- (c) Office of the Assistant Secretary of Defense, "Department of Defense Unified Capabilities Requirements 2008 Change 1," 22 January 2011
- (d) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 1," 22 January 2010
- (e) Joint Interoperability Test Command, "Information Assurance (IA) Assessment of Avaya Communication Manager Messaging (CMM) Release (Rel.) 6 (Tracking Number 1018801)", 22 June 2011

## **CERTIFICATION TESTING SUMMARY**

**1. SYSTEM TITLE.** Avaya Communication Manager Messaging (CMM) Version 6.0.1 (00.1.510.1) Service Pack 19130 hereinafter referred to as the System Under Test (SUT).

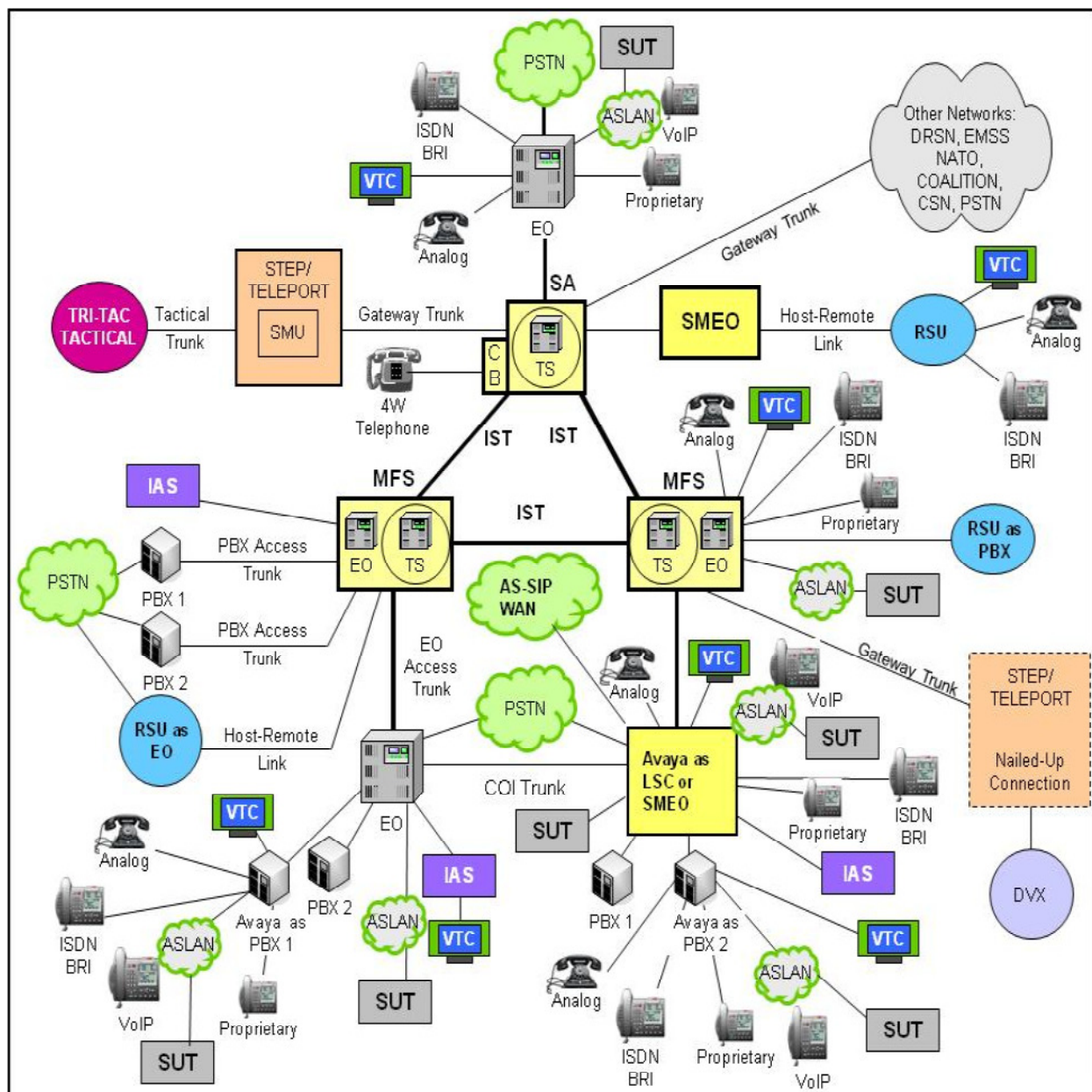
**2. SPONSOR.** Program Manager Defense Communications and Switched System, Technical Management Division (PM DCASS-TDM).

**3. SYSTEM POC.** Shirley Dolengo, Shore Telephony APM, 4301 Pacific Highway, Dan Diego, California 92110, e-mail: Shirley.dolengo@navy.mil.

**4. TESTER.** Joint Interoperability Test Command (JITC), Fort Huachuca, Arizona.

**5. SYSTEM UNDER TEST DESCRIPTION.** The SUT is an open, scalable voice messaging application for Avaya CM. The CMM runs under system platform Cent OS/XEN on the Avaya S8800 Server. The Avaya S8800 Server is based on the Intel Xeon E5500 Series (Nehalem) processor. The S8800 Server comes equipped with a Redundant Array of Independent Disks (RAID) controller and a standard redundant hard disk drive. A second power supply is available as an option in some server configurations.

**6. OPERATIONAL ARCHITECTURE.** The Unified Capabilities Requirements (UCR) Defense Information System Network (DISN) architecture in Figure 2-1 depicts the relationship of the SUT to the DISN switches.



**LEGEND:**

ASLAN Assured Services Local Area Network  
 4W 4-Wire  
 BRI Basic Rate Interface  
 CB Channel Bank  
 COI Community of Interest  
 CSN Canadian Switch Network  
 CUCM Cisco Unified Communications Manager  
 DISN Defense Information System Network  
 DVX Deployable Voice Exchange  
 EMSS Enhanced Mobile Satellite System  
 EO End Office  
 IAS Integrated Access Switch  
 ISDN Integrated Services Digital Network  
 IST Interswitch Trunk

MFS Multifunction Switch  
 NATO North Atlantic Treaty Organization  
 PBX Private Branch Exchange  
 PBX 1 Private Branch Exchange 1  
 PBX 2 Private Branch Exchange 2  
 PSTN Public Switched Telephone Network  
 RSU Remote Switching Unit  
 SMEO Small End Office  
 SMU Switched Multiplex Unit  
 STEP Standardized Tactical Entry Point  
 TDM/P Time Division Multiplex/Packetized  
 Tri-Tac Tri-Service Tactical Communications Program  
 TS Tandem Switch  
 VoIP Voice over Internet Protocol  
 VTC Video Conferencing

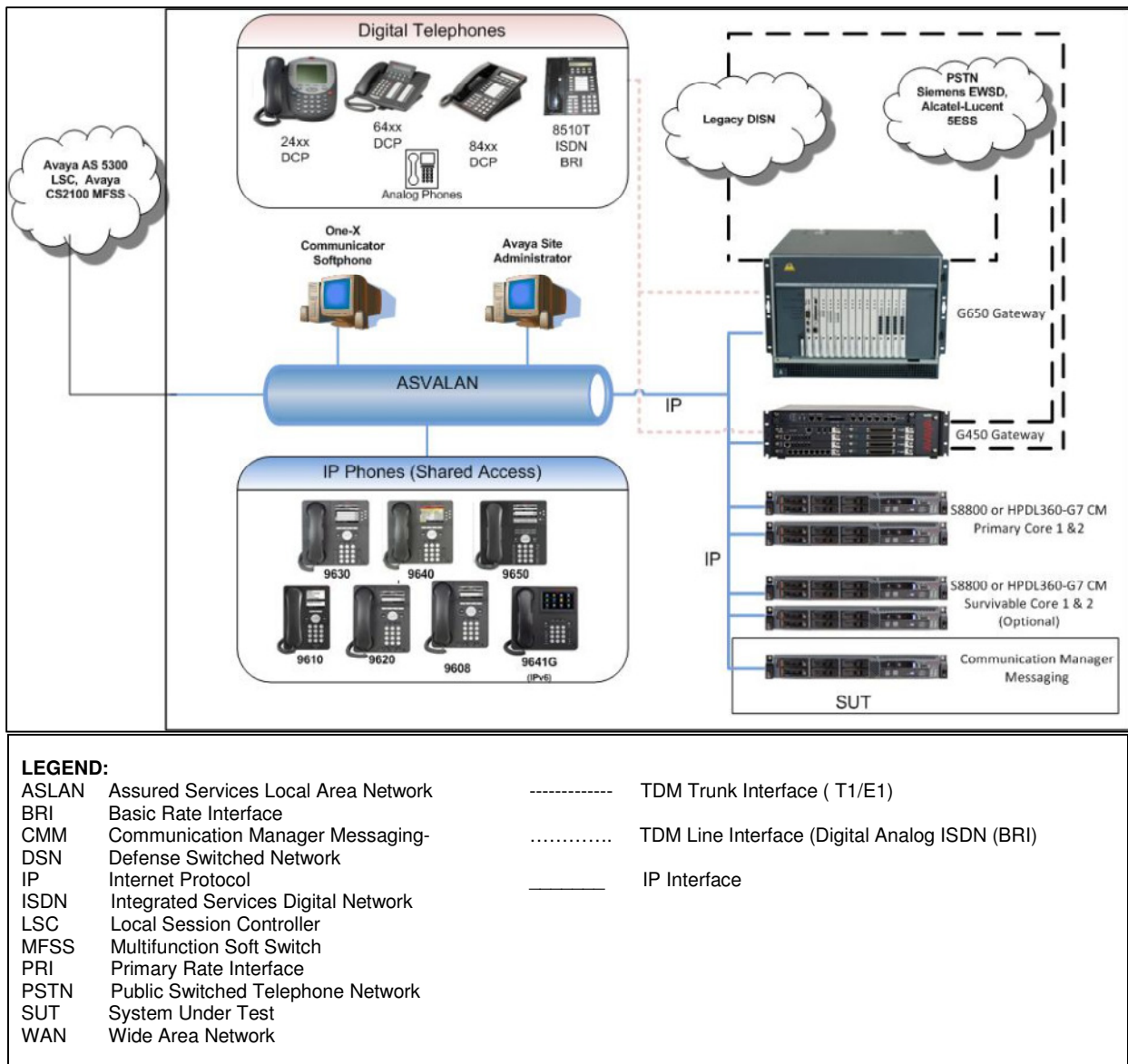
**Figure 2-1. DISN Architecture**

**7. REQUIRED SYSTEM INTERFACES.** Requirements specific to the SUT and interoperability results are listed in Table 2-1. These requirements are derived from the UCR Interface and CR/FRs and were verified through JITC testing. The specific SUT applications certified on each interface are depicted in Table 2-1.

**Table 2-1. SUT Functional Requirements and Interoperability Status**

Interface	Critical	Certified	CR/FRs	Met	UCR Paragraph																																
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<b>NOTES:</b> 1. In accordance with UCR 2008 Change 1, Section 5.3.5, Table 5.3.5-1 with exception of IP End Instruments all CPE devices have a conditional requirement for IPv6 capability. IPv6 is conditional for the SUT and is not offered and was not tested. 2. Security is tested by DISA-led Information Assurance test teams and published in a separate report, Reference (e).																																					
<b>LEGEND:</b> <table><tr><td>1000BaseT</td><td>1000 Mbps (Baseband Operation, Twisted Pair) Ethernet</td><td>FCC</td><td>Federal Communications Commission</td></tr><tr><td>802.3-2005</td><td>Local Area Network/metropolitan Area Network</td><td>IEEE</td><td>Institute of Electrical and Electronics Engineers</td></tr><tr><td></td><td>Carrier Sense Multiple Access/Collision Detection</td><td>IP</td><td>Internet Protocol</td></tr><tr><td></td><td>Access Method</td><td>IPv6</td><td>IP version 6</td></tr><tr><td>C</td><td>Conditional</td><td>Mbps</td><td>Megabits per second</td></tr><tr><td>DISA</td><td>Defense Information Systems Agency</td><td>R</td><td>Required</td></tr><tr><td>DISR</td><td>Department of Defense Information Technology Standards Registry</td><td>SUT</td><td>System Under Test</td></tr><tr><td>DSCP</td><td>Differentiated Services Code Point</td><td>UCR</td><td>Unified Capabilities Requirements</td></tr></table>						1000BaseT	1000 Mbps (Baseband Operation, Twisted Pair) Ethernet	FCC	Federal Communications Commission	802.3-2005	Local Area Network/metropolitan Area Network	IEEE	Institute of Electrical and Electronics Engineers		Carrier Sense Multiple Access/Collision Detection	IP	Internet Protocol		Access Method	IPv6	IP version 6	C	Conditional	Mbps	Megabits per second	DISA	Defense Information Systems Agency	R	Required	DISR	Department of Defense Information Technology Standards Registry	SUT	System Under Test	DSCP	Differentiated Services Code Point	UCR	Unified Capabilities Requirements
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**8. TEST NETWORK DESCRIPTION.** The SUT was tested at JITC's Global Information Grid Network Test Facility in a manner and configuration similar to that of the DISN operational environment. Testing the system's required functions and features was conducted using the test configurations depicted in Figure 2-2.



**Figure 2-2. SUT Test Configuration**

**9. SYSTEM CONFIGURATIONS.** Table 2-2 provides the system configurations, hardware and software components tested with the SUT. The SUT was tested in an operationally realistic environment to determine interoperability with a complement of DISN switches noted in Table 2-2.

**Table 2-2. Tested System Configurations**

System Name	Software Release	
Avaya CS2100 XACORE	SEO9.1-Aura™ AS5300 version 2 MFSS	
Avaya AS5300	2.0	
Siemens EWSD	Release 19d Patch Set 46	
Alcatel-Lucent 5ESS	5E16.2 Broadcast Warning Message (BWM) 09-0002	
Avaya Aura S8800	6.0.1(00.1.510) Service Pack 19130	
SUT	Servers	Software/Firmware
Avaya CMM Rel 6.0.1 Avaya S8800 Server (CMM Server)	DOMO (Virtual Controller)	CentOS v 5.4
		Xen Hypervisor 3.4.2
		Linux Kernel 2.6.18-128.AV14xen
		MIT Kerberos krb5-1.6.1-35el_5.6
		Open SSL V0.9.8e
		Tomcat 6.0.29
		McAfee linuxShield v1.51-260
	CDOM (Virtual machine)	Apache 2.2.3
		CentOS v5.4
		Linux Kernel 2.6.18-128.AV14xen
		MIT Kerberos krb5-1.6.1-36el_5.6
		OpenSSH v4.3p2-36.el5_4.2
		OpenSSL v0.9.8e
		Tomcat 6.0.29
	RHEL (Virtual Machine)	McAfee LinuxShield v1.5.1-260
		Apache 2.2.3
		RHEL5.3
		Linux Kernel 2.6.18.128.AV14xen
		MIT Kerberos krb5-1.6.1-36el5_4.2
		OpenSSH v4.3p.-36.el5_4.2
		OpenSSL v0.9.8e
		Tomcat 6.0.29
		McAfee LinuxShield v1.5.1-260
		Apache 2.2.3
		PHP v5.2.14
		CMM SMI 6.0.1
Telephones Types Tested with the SUT	Model	Software/Firmware
Avaya IP Phones	9641	S9641_41HAL_BR6_14e_V452.var
	9610	Ha96xxua3_0_21r02St.bin
	9620	Ha96xxua3_0_21r02St.bin
	9630	Ha96xxua3_0_21r02St.bin
	9640	Ha96xxua3_0_21r02St.bin
	9650	Ha96xxua3_0_21r02St.bin
	9608	S9608_11HALBR6_0_16T_v452.tar
Panasonic Analog	KT-TS105W	N/A
Digital Phones	2410	N/A
	2420	N/A
	6416D+M	N/A
ISDN 8510T	Lucent Classic	N/A

**Table 2-2. Tested System Configurations (continued)**

<b>LEGEND:</b>			
CentOS	Community Enterprise Operating System	Rel.	Release
CDOM	Console Domain	RHEL	Red Hat Enterprise Linux
CMM	Communications Manager Messaging	SSH	Secure Shell
DOMO	Core Domain	SSL	Secure Socket Layer
MIT	Massachusetts Institute of Technology	v	version
PHP	Hypertext Preprocessor	SUT	System Under Test

**10. TEST LIMITATIONS.** None.

**11. TEST RESULTS**

**a. Discussion**

(1) Voice mail interaction with Multi-Level Precedence and Preemption (MLPP). The UCR 2008 Change 1, Section 5.3.2.25 states that Customer Premise Equipment (CPE) must meet MLPP requirements. The SUT was tested in accordance with (IAW) the UCR, Section 5.2.2.3, which states that precedence levels above ROUTINE shall not be forwarded to voice mail. Intra-switch and inter-switch calls were placed over the network test configuration to subscribers configured on the Avaya Aura Communication Manager and assigned voice mail at different precedence levels with the results shown below. MLPP interaction with voice mail was tested with the following phone types: 96xx series IP phones, digital, ISDN (BRI) and analog phones.

(a) All ROUTINE calls placed to a voice mail subscriber that was busy or did not answer, were properly routed to voice mail as required by the UCR 2008 Change 1, Section 5.3.2.25.

(b) All calls above ROUTINE placed to a voice mail subscriber that was busy or did not answer were not routed to voice mail, but instead were diverted to an alternate directory number if not answered before the precedence call diversion timer expired, as required by UCR 2008 Change 1, Section 5.3.2.25.

(2) Differentiated Services Code Point (DSCP). The UCR 2008 Change 1, paragraph 5.3.3.3.2, states that the product shall support the plain text DSCP plan, as shown in Table 5.3.3-1, DSCP Assignments, and the DSCP assignment shall be software configurable for the full range (0-63) to support Deployable deployments that may use a different DSCP plan. As part of the session setup process, the Communication Manager (CM) controls what DSCP to use or whether the SUT connects to the subsequent session media stream packets. The exact DSCP method used complies with UCR Change 1, Section 5.3.3.3.2. The SUT met all DSCP Packet Marking requirements for IPv4 only.

(3) IPv6: IAW UCR 2008 Change 1, Section 5.3.5, Table 5.3.5-1 with exception of IP End Instruments all CPE devices have a conditional requirement for IPv6 capability. This capability is conditional for the SUT and was not tested.

(4) IAW UCR 2008 Change 1, Section 5.2.3.2 all CPE devices must be compliant with FCC Part 15 and Part 68. The SUT met this requirement with a vendor LoC.

(5) IAW UCR 2008 Change 1, Section 5.3.3.2 Ethernet interfaces shall be in accordance with IEEE 802.3-2002. The SUT met this requirement with a vendor LoC.

(6) Security. Security is tested by DISA-led Information Assurance test teams and published in a separate report, Reference (e).

**b. Test Summary.** The SUT meets all of its critical interoperability requirements and is certified as interoperable for joint use within the DISN as a CPE voicemail system. The SUT met the critical interoperability requirements set forth in Reference (d) using test procedures derived from Reference (e). The SUT was tested with the Avaya S8800 CM Version 6.0.1-00.1.510.1 with Service Pack 19130. JITC analysis determined that the SUT is also certified with other Avaya S8700, S8710, S8720 and S8800 CMs previously placed on the UC APL and currently placed on the UC APL and is therefore certified for joint use within the DISN.

**12. TEST AND ANALYSIS REPORT.** No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at <https://stp.fhu.disa.mil>. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at <http://jit.fhu.disa.mil> (NIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at <http://jitc.fhu.disa.mil/tssi>. Due to the sensitivity of the information, the Information Assurance Accreditation Package (IAAP) that contains the approved configuration and deployment guide must be requested directly through government civilian or uniformed military personnel from the Unified Capabilities Certification Office (UCCO), e-mail: [ucco@disa.mil](mailto:ucco@disa.mil).